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lier, Sven Wicksell, N. R. Jörgensen and Arne Fisher is at present doing a veritable yeoman's service, and there is no doubt that before long we shall have a sound theory to build upon. The reviewer fully agrees with Westergaard that before this theory is finished much energy will be wasted through the efforts of some American economists in the application of the incomplete theory to economic problems. The mathematicians, however, are not to blame for blunders committed by economists who insist upon using the tools of an unfinished and incomplete mathematical theory to various complicated economic problems. A dull saw does not work very well, especially in knotty pieces of wood.

In others chapters Westergaard treats numerous practical problems from the fields of economics and insurance, such as the theory and use of index numbers, laws of wages, price theories and the theory of risk. Many of these chapters have become small gems of concentration and clear exposition of thought. The Danish statistician has here, on 6 to 7 pages, imparted more real knowledge than some of his American colleagues have spread over more than 80 pages of mere verbalisms.

The reviewer warmly recommends Professor Westergaard's splendid book on mathematical statistics. He is fully convinced, moreover, that the apparent criticisms by Westergaard of the advocates of ultramathematical methods in statistics has reference only to those who—to borrow a phrase from another eminent Danish scholar and statistician, the biologist Johannsen—habitually “treat statistics as mathematics and not *with* mathematics.” The erroneous view which Westergaard's recent articles may have created in certain American circles arises solely from the fact that what he is apt to regard as elementary statistics are considered as higher mathematics by the majority of his American colleagues, and what he conceives of as higher mathematics is quite beyond the comprehension of most of our present day statisticians.

T. W.

#### COMMITTEE WORK IN FEDERAL STATISTICS AND LEGISLATION FOR THE FOURTEENTH AND SUBSEQUENT DECENNIAL CENSUSES.

In a paper read at the meeting of this Association at Princeton, N. J., December 29, 1914, Dr. S. N. D. North, Director of the Census from 1903 to 1909, suggested\* that economists and statisticians take counsel of each other as to what course they could best pursue to promote the interests of governmental statistics, especially in view of the approaching Federal Decennial Census of 1920. Dr. North's paper was a continuation of part of the theme of Professor Willcox's article in the *Political Science Quarterly* for September, 1914. The Executive Board of our Association, acting upon this and other suggestions, appointed a Committee on Federal Statistics to coöperate with a similar committee of the American Economic As-

\*“The Census Office in Commission.” *QUARTERLY PUBLICATIONS* of the American Statistical Association, Vol. XIV, p. 467

sociation, and empowered that Committee to consider the whole problem of federal statistics in relation to the needs of the American economists and statisticians. The question of the 1920 Census was subordinate, therefore, to the problem of governmental statistics considered in its entirety.

Other associations and societies, actuated directly and indirectly by the suggestion of Dr. North, and having more specialized interests, appointed committees to consider the bearing of plans for the 1920 Census upon the subjects of inquiry with which they were concerned. These Associations and Societies were:

American Public Health Association, Section on Vital Statistics: Committee on Relation of 1920 Census to Vital Statistics, W. H. Guilfooy, Chairman; Edwin W. Kopf, Corresponding Secretary (July, 1916);

American Association for Labor Legislation; Committee on 1920 Census, Irving Fisher and John B. Andrews (February, 1917);

Casualty Actuarial and Statistical Society; Committee on Social Statistics and the 1920 Census, I. M. Rubinow, Chairman (April, 1917).

Representatives of the American Economic Association, American Statistical Association and American Public Health Association\* met at the City Club, New York City, on January 27, 1917, discussed some of the problems of federal statistics, incidentally the 1920 Census, and adopted the following resolution:

“That the coöperating committees favor the appointment by the President of a statistical commission to make a survey of federal work in statistics and to make recommendations for the coördination and improvement of such work.”

The work of the American Public Health Association Committee has been outlined elsewhere.† The Committee appointed by the Casualty Actuarial and Statistical Society has been prevented from holding any meeting by war exigencies, but has had correspondence with the Director of the Census and with the Chairman of the Committee on Census, House of Representatives, chiefly with respect to Section 8 of the proposed bill. A round-table discussion of 1920 Census problems was conducted under the auspices of the American Statistical Association, December 28, 1917, at the meeting in Philadelphia. Mr. Koren presided. Dr. Joseph A. Hill, Dr. Helen L. Sumner, Dr. F. L. Hoffman, Dr. J. W. Trask and Mr. E. W. Kopf presented the views of federal bureaus and of some American learned societies. A quotation from Professor Allyn A. Young's Presidential address to our Association, December 27, 1917, will also be of interest as bearing on the attitude of American learned societies toward the Census and other federal statistical enterprises.

“A committee of this Association, coöperating with committees of other associations, has been studying the problem of the organization of statistical

\* W. C. Mitchell, W. A. Hathaway, John Koren, W. F. Willcox, T. S. Adams, F. L. Hoffman, E. W. Kopf, N. I. Stone.

† New York Medical Journal, October 6, 1917, and QUARTERLY PUBLICATIONS of the American Statistical Association, September, 1916 and December, 1917.

work in Washington. I am informed that it has given favorable consideration to proposals looking toward the creation of a central statistical commission. It is hoped that its efforts will help to secure tangible progress toward that end. But the functions of such a commission ought to include more than merely introducing some measure of coördination into the work of the existing Washington offices. It should make recommendations to Congress for the inauguration of new statistical activities, utilizing either established offices or new ones according to the circumstances of the particular case.”\*

Meanwhile, the Federal Children's Bureau had presented to the American Association for Labor Legislation, meeting at Columbus, Ohio, December 29, 1916, a statement of its needs for statistics of the American family. That Association adopted a resolution, urging the tabulation of the facts collected upon the schedules of the 1910 Census.† The Children's Bureau could use, and in the opinion of responsible private statisticians should have, also, similar data from the records of the 1920 Census. Section 8 of the Bill as passed by the House, July 3, 1918, does not specifically provide for the enumeration of the facts. (See later comment on Section 8.)

The Director of the Census appointed a committee of experienced bureau officials on July 10, 1917, “to consider what changes in the act of July 2, 1909 . . . would be necessary or desirable in making provision for the next or Fourteenth Census.” This committee held nineteen meetings between July 10 and December 4, 1917. The Thirteenth Census act was gone over, section by section, and only such changes were recommended as were, in the opinion of the committee, needed to insure efficiency and economy in the organization of the work of taking the Fourteenth Census. No radical revision of the Thirteenth Census act was deemed necessary. The importance of promptly completing the work of the Fourteenth Census within the limit of time allowed by law, or before July 1, 1922, was constantly kept in mind. To further these main ends, the Bureau Committee made due allowance for increase in the field and office forces, and for such increases in compensation as were believed to be necessary in order to retain or secure the grade of employees required for the work; it also aimed to avoid burdening the schedules with questions of little value, or of value not commensurate with the cost of securing the data. Certain defects in the Thirteenth Census act in connection with the prosecution of frauds were also remedied. The Director of the Census presented this report to the House Committee on the Census on February 20, 1918. The House Committee held numerous meetings between that date and April 10, 1918. The complete text of the bill submitted by Mr. Rogers, together with the discussion by the House Committee, was published, with index, in a document of 260 pages.‡

\* QUARTERLY PUBLICATIONS of the American Statistical Association, March, 1918.

† American Labor Legislation Review, March, 1917, p. 187.

‡ “Hearing before the Committee on the Census, House of Representatives, Sixty-fifth Congress, Second Session, on a Bill to Provide for the Fourteenth and Subsequent Decennial Censuses.” Government Printing Office, Washington, D. C., 1918.

The bill, amended in a few minor particulars as compared with the Census Bureau Committee draft, was introduced in the House on May 8, 1918, as H. R. 11,984 (*Cong. Rec.*, 65th Cong., 2d Session, p. 6712), and was referred to the Committee on the Census. The House Committee reported the Bill on May 21, 1918, without further amendment, accompanied by report No. 581. A minority report, No. 581 Part 2, was submitted by Mr. Hersey. On June 22 the House, sitting as a Committee of the Whole on the State of the Union, commenced work on the Bill. Mr. Hersey addressed the House on the general scope and objects of the proposed law. He urged that the 1920 Census be limited to an enumeration of the population (as required by Section II of Article I of the Constitution). Furthermore, Mr. Hersey objected in particular to the provision in the reported bill for "fifteen statistical experts at \$2,000 each" and to the change in the method of appointing the supervisors of the Census. The bill reported by the House Committee stipulated that these supervisors be appointed "by the Secretary of Commerce upon the recommendation of the Director of the Census." Under former practice, these supervisors were appointed "by the President, by and with the advice and consent of the Senate." This objection brought in another question. The Bureau Committee had recommended, and the House Committee had so reported it, that the date of the Census should be advanced from April 15 to January 1, 1920. The change in the method of appointing the supervisors had been made in the draft submitted by the Bureau Committee, "because the Senate in all probability will not be in session at the time when the appointment of supervisors must be made. The next Census . . . will be taken in January, 1920. The present Congress will expire March 4, 1919 and the next Congress will normally not meet until December of that year. But the supervisors should be selected and commissioned between July 1, the date on which the Bureau is organized on the decennial Census basis and October 1, or ninety days before the date of the Census."\* The change in the date of taking the Census (from April 15 to January 1) in Section 20 was made to meet the requirements of the Census of agriculture.†

Mr. Aswell replied to Mr. Hersey (p. 8813 of the *Record*), emphasizing the need (1) for taking the Census as of January 1, 1920; (2) for including a Census of agriculture, manufactures and of mines and quarries; (3) for revising the Thirteenth Census law so as to allow sufficient time for planning the 1920 enumeration, thus to avoid the initial haste and confusion which characterized the Thirteenth Census. After indicating clearly the character and provisions of each section of the Bill, Mr. Aswell considered some broad needs of the Bureau of the Census. His statement of the first need will be of interest to American statisticians who have had the larger problem of governmental statistics in mind.

\* P. 21, Hearing before the Committee on the Census, February 20, 1918.

† *Idem* p. 28.

"Permanent recognition by Congress that the Bureau of the Census is the one statistical service of the National Government, created by the Congress for this sole purpose, to which should be assigned all inquiries for statistical facts required by this national body, as well as statistical work which is now being done in many different ways and more or less accurately by boards, commissions and a few other bureaus of departments of the regular service. We should remember that we created this service to do our statistical work and that we have made our annual appropriations to enable this office to thoroughly equip itself with statistically trained employees and all other resources and machinery for prompt, efficient and accurate statistical work. . . . Because of the decentralization of the statistical work of our National Government, no one of us today knows just where to secure the data we need. The evil has been growing for a number of years. The time has come for the National Congress to place itself on record in this matter. We should say to all branches of the national service in this city that the statistical work of our Government must be done by the statistical bureau we created to do this class of work."

The remainder of the debate of June 22 was devoted to further discussion of the advisability of changing the date of the Census, of incorporating a Census of agriculture, manufactures, mines and quarries. Debate on the sections of the bill began June 25, 1918. As finally passed by the House the various important sections are substantially as follows:

Section 1: The Census shall include: population, agriculture, manufactures, and mines and quarries in the United States, including each State, the District of Columbia, Alaska, Hawaii and Porto Rico. A Census of Guam and Samoã shall be taken in the same year by the respective governors of those islands and of the Panama Canal Zone by the governor of the Canal Zone in accordance with plans prescribed and approved by the Director of the Census.

Section 3: In addition to the staff provided by the Legislative, Executive and Judicial appropriation act for the fiscal year immediately preceding the decennial Census period, there may be employed: an Assistant Director, a chief statistician, a disbursing clerk, an appointment clerk, a private secretary to the Director, 4 stenographers, 8 expert chiefs of divisions, and 15 statistical experts. The Assistant Director shall be appointed by the President, by and with the advice and consent of the Senate. The chief statistician, the disbursing clerk, the appointment clerk, the chiefs of divisions, and the private secretary to the Director shall be appointed without examination by the Secretary of Commerce upon the recommendation of the Director of the Census. The statistical experts and the stenographers shall be appointed in conformity with the civil service act and rules.

Section 5: Provides salaries of officials as follows:

Director . . . . .	\$7,000
Assistant Director . . . . .	4,500
Three chief statisticians and the chief clerk . . . . .	3,000 each

Two other chief statisticians . . . . .	3,000 each
Geographer . . . . .	2,750
Disbursing clerk . . . . .	3,000
Appointment clerk . . . . .	2,750
Chiefs of divisions . . . . .	2,250 each
Private secretary to the Director . . . . .	2,250
Statistical experts . . . . .	2,000 each
Stenographers provided for in Section 3 . . . . .	1,800 each

Section 8: The heart of the bill. Stipulates the topics or inquiries to be included in the Census schedules. The population schedule is to include queries for each inhabitant as to: name, place of abode, relationship to head of family, color, sex, age, conjugal condition, place of birth, place of birth of parents, nationality or mother tongue of all persons born in foreign countries and of parents of foreign birth, number of years in United States, citizenship, occupation, whether or not employer or employee, whether or not engaged in agriculture, school attendance, literacy, tenure of home, and the name and address of each blind or deaf and dumb person. The agriculture schedule is to include name, color, sex, and country of birth of occupant of each farm, tenure, acreage of farm, acreage of woodland, value of farm and improvements, the encumbrance thereon, value of farm implements, number of live stock on farms, ranges and elsewhere, and the acreage of crops and the quantities of crops and other farm products for the year ending December 31 next preceding the enumeration. Inquiries to be made also as to the quantity of land reclaimed by irrigation and drainage and the crops produced; also the location and character of irrigation and drainage enterprises and the capital invested in such enterprises. Manufactures, and mines and quarries schedules shall include name and location of each establishment, character of organization, whether individual, corporate or other form, character of business or kind of goods manufactured, amount of capital actually invested, number of proprietors, firm members, copartners and officers, and the amount of their salaries, number of employees and the amount of their wages, quantity and cost of materials used in manufactures, principal miscellaneous expenses, quantity and value of products, time in operation during year, character and quantity of power used, character and number of machines used.

The American Public Health Association Committee addressed a letter to the Director of the Census with respect to the inquiries on the population schedule. The letter asked for an expression of Bureau opinion on the inclusion of the following inquiries on the population schedule, the Committee having borne in mind the need for restricting the scope of the Census:

1. The American Public Health Association Committee had received several requests from its correspondents that it incorporate in its communication to the Director on the legislation for the 1920 Census, the subject of family statistics. Specifically the Committee's letter asked that for each married or widowed person the following facts be enumerated:

- (a) Calendar year of marriage (or, number of years married).
- (b) Number of children live-born to the marriage.
- (c) Number of such live-born children living on Census Day.

The Director replied substantially as follows:

Inquiry regarding the number of children born and the number living on Census Day had been made part of the Eleventh Census (1890) and of the Twelfth Census (1900). No tabulations were made of the 1890 data, and but limited use was made of the 1900 facts (28th volume of the Immigration Commission report). The Thirteenth Census schedules bore the following inquiries in regard to each married, widowed or divorced woman, "number of years of present marriage" and "mother of how many children," the latter question being sub-divided into (1) number born, *i. e.*, the number of children (excluding stillborn) that each such woman had had during her lifetime, by her present or by any former marriage, and (2) the "number of children now living," whether they were residing with her or elsewhere. Various practical difficulties prevented the issue of any tabulations of these subjects of inquiry. Such a tabulation had been tentatively provided for as a part of the Bureau program, but this is now contingent somewhat upon the demands upon the Bureau for war work. "The inclusion in the schedule for 1920 of inquiries similar to those for 1910 also can be decided later, as the form and subdivision of the inquiries to be made on the various Census schedules is determined by the Director of the Census, and the matter will thus receive due consideration at the proper time.\*

2. Whether person is a survivor of the war with the Central Teutonic Powers. The Director was asked whether it would be advisable to provide for an enumeration of survivors of the present war. The Director's letter in reply suggested that consideration of the possibility of providing for this enumeration be deferred until the period for taking the Census is nearer at hand and the probable status of affairs on Census Day can be more nearly determined.

3. Interdecennial or State Censuses. The Committee suggested that a provision for Federal subsidy of State or Interdecennial Censuses, similar to Section 22 of the Census Act of March 3, 1879, be included in the 1920 Census Bill. The Director's letter said that the Bureau was entirely mindful of the need for a more frequent enumeration of population. It was not thought practicable to attempt to secure authority for an interdecennial Census of population of limited scope even, as a part of the Act providing for the Fourteenth Decennial Census. In the opinion of the Bureau the necessary legislation should not be sought until after the substantial completion of the decennial enumeration of population and the publication of the reports early in 1922 is assured.

Section 9. Provides for appointment of 26 supervisors. See comment in preceding part of this note on objections on the floor of the House to mode of appointing the supervisors. (Pages 9136-9143, *Cong. Record*, 65th Congress 2d Session, give full text of debate on this section.)

\* See page 7, "Tentative Program of the Bureau of the Census, 1916-1919," Government Printing Office, Washington, D. C., July, 1916.



Section 12. Stipulates how and when the Census shall be taken. Census date for enumeration of population changed from April 15 to January 1. See also Section 20.

Section 23. A new paragraph has been inserted, the purpose of which is to eliminate, as far as possible, the "boosting" tactics employed in many cities and towns during the taking of the last decennial Census.

The bill passed the House July 3, 1918. The matter now rests with the Senate Committee on the Census. A further note will be submitted on the course of the bill in the Senate(

E. W. KOPF.

American Public Health Association Committee on Relation of 1920 Census to Vital Statistics, New York City.

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*Skandinavisk Aktuarietidsskrift.* 1918, No. 1-2. Stockholm.

About the year 1903 there appeared a remarkable little journal, entitled "Aktuaren" (The Actuary), published by Scandinavian actuaries. The number contained a series of brilliant articles, showing how advanced the Scandinavian actuaries were in their profession. However, the promising beginning resulted only in a single number. The political differences between Norway and Sweden which terminated the personal union between the two countries killed the attempt to produce a common organ for the actuaries of three sister nations.

In 1914 the Swedish Actuarial Union launched a new journal, entitled "Svenska Aktuarieföreningen Tidsskrift." It is this journal which now has become the common organ under the above name, for all the actuaries and statisticians of the three countries. It would, however, be erroneous to regard it as an exclusive Scandinavian journal. In fact, it is truly cosmopolitan and international in character and scope. The present number contains articles in French, English, Danish and in German, the latter article in German being contributed by the eminent Russian statistician, Bortkiewicz. Other articles in English by the Danish actuary, Dr. Steffensen, and the eminent young Swedish statistician, Dr. Wicksell, show how rapidly the Scandinavians are out-distancing their colleagues in other countries in researches on modern mathematical statistics. There is no doubt that the labors of the ultra mathematical statistical school of Scandinavia, under the able leadership of such eminent scholars as Charlier, Wicksell and Jorgensen, have surpassed even the English biometricians in elegance and general application of their methods. It is, however, doubtful if many of our American statisticians and economists would benefit much by the Scandinavian researches, because such researches require an extensive training in higher mathematical analysis, which, unfortunately, our actuaries and statisticians as a rule do not possess. It is a significant fact that the University of Lund has established a professorship in Mathematical Statistics. While we have had plenty of chairs of statistics in our universities this is probably the first instance of a department that devotes its time exclusively to mathematical statistics. The present occupant of the